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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,632	12/05/2003	Alfredo Cardenas	H0004825-1050	9095

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Honeywell International, Inc.
Law Dept. AB2
P.O. Box 2245
Morristown, NJ 07962-9806

EXAMINER

KERSHTEYN, IGOR

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/728,632	CARDENAS ET AL.	
	Examiner	Art Unit	
	Igor Kershteyn	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-14, 17 and 20-32 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 15, 16, 18 and 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/05/2003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

Claim 17 is objected to because of the following informalities:

In lines 2-3, "a compressor housing" should be --the compressor housing--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 17, 20, 22-27, and 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Ball (3,671,137).

In figures 2 and 5, Ball teaches an apparatus for balancing a pressure differential across a bearing 66, comprising an impeller 28 on a shaft 25; the impeller 28 having an upstream side and a downstream side (not numbered); a bearing housing 59 on the downstream side of the impeller 28, the bearing housing 66 having an upstream side and a downstream side (not numbered); and a plurality of annular grooves (not numbered) on the impeller 28; the plurality of annular grooves concentrically situated in relation to the shaft 25.

Claims 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Nichols (3,728,857).

In figures 1-5, and column 5, lines 11-68, column 6, lines 1-59, Nichols teaches a method of compressing a gas without causing bearing lubricant leak, comprising: flowing a gas into a compressor housing (not numbered), applying aerodynamic resistance to the gas; directing the gas through and around a bearing 36, and directing the gas across an outer surface of a shaft 12.

Note. Claim 17 is a product-by-process claim and the apparatus or structure claimed is identical to that described in the reference presented by the examiner and thus anticipated by the reference because patentability of a product does not depend on its method of production. See MPEP 2113.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ball (3,671,137) in view of Obara (6,599,020).

In figures 2 and 5, Ball teaches an apparatus for balancing a pressure differential across a bearing 66, comprising an impeller 28 on a shaft 25; the impeller 28 having an upstream side and a downstream side (not numbered); a bearing housing 59 on the

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downstream side of the impeller 28, the bearing housing 66 having an upstream side and a downstream side (not numbered); and a plurality of annular grooves (not numbered) on the impeller 28; the plurality of annular grooves concentrically situated in relation to the shaft 25, a labyrinth seal 24 situated downstream from the bearing housing 59.

Ball doesn't teach the labyrinth seal including a plurality of discs.

Obara, in figures 1-10, teaches a labyrinth seal including a plurality of discs 5,6.

Since Ball and Obara are analogous art because they are from the same field of endeavor, that is the labyrinth art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the labyrinth seal of Ball with the discs as taught by Obara for the purpose of improving the serviceability of the labyrinth seal.

Note. Eventhough Obara does not each labyrinth seal including four discs, mere duplication of discs has no significance because a new and unexpected result is produced. (See MPEP 2144.04)

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ball (3,671,137) as modified by Obara (6,599,020), further in view of Profant et al. (4,834,693).

Ball as modified by Obara teach all the claimed subject matter except that they don't teach the shaft comprises aluminum.

Profant et al in figures 1 and 2, teach a shaft 1 for a centrifugal impeller comprising aluminum.

Since Ball as modified by Obara and Profant et al. are analogous art because they are from the same field of endeavor, that is the shaft for a centrifugal impeller art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the shaft of Ball as modified by Obara with the aluminum content as taught by Profant et al. for the purpose of weight reduction.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ball (3,671,137) as modified by Obara (6,599,020), further in view of McInerney (4,613,288).

Ball as modified by Obara teach all the claimed subject matter except that they don't teach the impeller comprises aluminum.

McInerney in figure 4, teach a die cast aluminum compressor housing a centrifugal impeller 96 comprising aluminum.

Since Ball as modified by Obara and McInerney are analogous art because they are from the same field of endeavor, that is the centrifugal compressor art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the compressor of Ball as modified by Obara with the aluminum housing as taught by McInerney for the purpose of weight reduction.

Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ball (3,671,137) in view of Obara (6,599,020).

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Ball teaches all the claimed subject matter except that he doesn't teach the labyrinth seal including a plurality of discs.

Obara, in figures 1-10, teaches a labyrinth seal including a plurality of discs 5,6.

Since Ball and Obara are analogous art because they are from the same field of endeavor, that is the labyrinth art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the labyrinth seal of Ball with the discs as taught by Obara for the purpose of improving the serviceability of the labyrinth seal.

Note. Eventhough Obara does not each labyrinth seal including four discs, mere duplication of discs has no significance because a new and unexpected result is produced. (See MPEP 2144.04)

Allowable Subject Matter

Claims 8, 9, 15, 16, 18, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art

Prior art made of record but not relied upon is considered pertinent to Applicant's disclosure and consist of seven patents.

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Swearingen (3,547,606) is cited to show a compressor having an impeller with a plurality of annular grooves concentrically situated in relation to a shaft but fails to teach a bearing housing.

Swearingen (3,828,610) is cited to show a compressor having an impeller with a plurality of annular grooves concentrically situated in relation to a shaft but fails to teach a bearing housing.

Swearingen (3,895,689) is cited to show a compressor having an impeller with a plurality of annular grooves concentrically situated in relation to a shaft but fails to teach a bearing housing.

Nakamura (3,898,793) is cited to show a compressor having an impeller with a plurality of annular grooves concentrically situated in relation to a shaft but fails to teach a bearing housing on the downstream side of the impeller.

Chang et al. (4,472,107) is cited to show a compressor having an impeller with a plurality of annular grooves concentrically situated in relation to a shaft but fails to teach a bearing housing.

Swearingen (4,385,768) is cited to show a compressor having an impeller with a plurality of annular grooves concentrically situated in relation to a shaft but fails to teach a bearing housing.

Meyerkord et al. (6,368,077) is cited to show a compressor having a labyrinth seal having around the periphery of an impeller shaft with a plurality of grooves.

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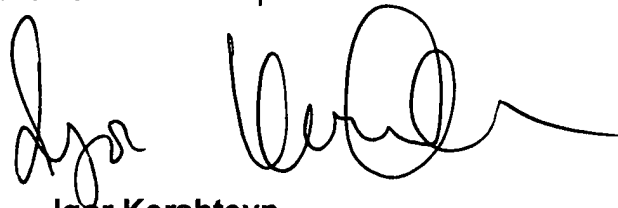
Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Kershteyn whose telephone number is **(571)272-4817**. The examiner can be reached on Monday-Friday from 8:00 a.m. to 4:30 p.m.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached on **(571)272-4820**. The fax number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308 0861.

IK
February 24, 2005



Igor Kershteyn
Patent examiner.
Art Unit 3745



EDWARD K. LOOK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700
3/1/05